Environmental Questions from the Roane County Community Meeting - March 5, 2009

General

1. **Are the Power Point presentations from the March 5 public meeting available, and if so, where?**

   Yes. They have been posted on the Department of Environment and Conservation's TVA Kingston Update Web page at http://www.tn.gov/environment/kingston then click on "Community Guidance."

2. **Sample results from different agencies and organizations seem to vary considerably. Who should we believe?**

   It is normal for sample results to vary some. Evaluating multiple samples requires the consideration of when the sample was taken, where the sample was taken, the method used to collect the sample and the method used to analyze the sample.

   The state laboratory operated by the Tennessee Department of Health is EPA certified to perform all Kingston area analyses. The methods used by our lab provide very low detection levels and enable us to determine compliance with water quality standards in all but a few cases. It is important also for people reviewing water quality data to understand Tennessee's water quality standards in order to accurately compare their results to the standards.

   For air samples and monitoring, the sensitivity of the method used to conduct the sampling and the sample volume collected can vary the results. Environmental regulations have sampling and analytical protocols to be followed in assessing a situation and in determining compliance with environmental standards.

   Overall, TDEC believes that sampling and analysis conducted in accordance with established environmental assessment protocols coupled with a robust quality assurance plan is the most reliable data to use in making environmental decisions.

   We always invite the public to conduct sampling and we appreciate the opportunity to review those results, though it is important to note that we are confident in the accuracy of the information we provide to the public.

3. **Can someone take the data for sampling and graph it against the standards so it is easy to understand?**

   This has been done for some pollutants. For example, the air monitoring is graphed on the following page of TDEC's TVA Kingston Update Web page: http://tn.gov/environment/kingston/air.shtml and updated regularly.

Additional graphing is done in the Power Point presentation posted at http://tn.gov/environment/kingston/community_guidance.shtml. Interpretation of sample results is included on the department's Web site.

4. **If all sampling is within the legal limits, why all the monitoring and why are some people sick?**

The Department of Health is the appropriate agency to address health-related questions and TDEC is consulting with the Department of Health regularly.

As far as sampling results to date, TDEC has not said all sample results meet regulatory standards. We have said that the public water supply is safe based on our sampling at the Kingston and Rockwood water treatment plant intakes and well sampling has not indicated exceedances of primary drinking water standards. However, there have been numerous violations of water quality standards in the spill area and we have concerns about the possibility of chronic (longer-term) biological effects. Continued monitoring is critical to document these impacts, especially as dredging of the ash commences.

The resolution of the ash spill is going to take a number of months to accomplish. During that time, conditions may change, and sampling will keep all informed of the result of those changes. All cleanup plans will be carefully evaluated. The corrective measures should result in the least damage to the environment possible, but those are predictions. Sampling will provide feedback to Environment and Conservation and the public as to the accuracy of those predictions, but more importantly, it will indicate whether the approved cleanup plan needs to be revised in light of the most current information.

5. **How long will the entire cleanup take? Does TVA's draft corrective action plan have due dates or estimated timeframes for completion of actions?**

We cannot speculate at this point on how long the entire cleanup will take to complete. There are a number of variables involved that can impact the cleanup time. Those variables include dredging capacity and hours of operation of the dredges and the location and approval of off-site disposal facilities. We can say that the department is committed to overseeing the cleanup for the long-term to ensure it is done correctly.

6. **What authority does EPA have to make TVA follow its recommendations?**

Notwithstanding the fact that TVA is a federal entity, TVA is subject to the jurisdiction of the Tennessee Water Quality Control Act because sovereign immunity has been waived by Congress in regard to the activities addressed in the state of Tennessee enforcement order issued Jan. 12, 2009 by the Clean Water Act (33 USC 1323); and, in addition, the Clean Air Act (42 USC 7418), and the Resource Conservation and Recovery Act (42 USC 6961). Further, having applied for and

received permits under the Solid Waste Disposal Control Act and the Water Quality Control Act, as stated herein, TVA has acknowledged that its activities in regard to fly ash are subject to the requirements of these laws.

7. **How can the impacted community be assured that TVA will be required to work with us to meaningfully involve the community in the cleanup process and keep the community informed?**

   There are some actions in the recovery stage that are more urgent in nature and are addressed under the emergency order issued by the state in January. The Department of Environment and Conservation is committed to keeping the public informed and receiving input through public meetings and maintaining the TVA Kingston Update page on the department's Web site. Other actions will require permitting and will be subject to the public participation requirements as outlined by the regulations, which include public notice, an opportunity to provide public comments and to request public hearings.

8. **What role will the community have in the cleanup and decision making process and how will the state and federal governments ensure it happens?**

   The public's role will manifest itself through public meetings and/or hearings, public notice, comments, etc.

9. **Is TVA going to remove the tons of rock they dumped onto the millions of gallons of coal ash?**

   The department has no indication that both weirs will not be removed. Weir #1 in the main channel of the Emory River must be removed once the ash is removed from the river.

10. **There are several daily inspections that appeared to be copied. The two inspection sheets from 8/11/08 and 9/15/08 are identical. It is not possible to write something the exact same way twice. What information has TDEC found to be improper and who is reviewing these documents?**

    TDEC has reviewed a sample of the inspection sheets completed by TVA staff members for the TVA Kingston Settling Pond, including the forms for 8/11/08 and 9/15/08. Inspection sheets examined were completed by the same individual and appear very similar. Inspection sheets completed by the same individuals were overlaid to determine if there were copies of the same inspection sheet with different dates. In each case there was enough difference in the overlap of letters or check marks to determine that the inspections sheets were not copies.

11. **Why was TVA allowed to have such a massive spill and how did this happen?**

The cause of the coal ash release is the subject of intense investigation. The state of Tennessee issued an enforcement order in January which, in addition to outlining requirements for cleanup and ongoing monitoring, requires any and all information that could be relevant to determining the cause of the release. The Department of Environment and Conservation has contracted with SAIC in order to utilize that company's geotechnical engineering experience as part of the state's investigation into the cause of the release. The state has also formed an advisory committee made of members of the department, as well as representatives from both Vanderbilt University and the University of Tennessee to guide the investigation to determine the cause of the failure at Kingston. The department will continue to post information to the Web site and keep the community informed of the progress of the investigation.

Water

1. **Is there a concern regarding drinking water once dredging begins?**

Since the spill itself did not directly impact local drinking water intakes, we consider it unlikely that dredging will either. Monitoring will be critical to provide feedback to the dredging operation in order to minimize the discharge of pollutants. There are no drinking water intakes in the area of the Emory River that is filled with ash, though the river must still be maintained for that possibility. Use as a drinking water source, therefore, is one of the classified uses of the river, along with use for recreation and protection of fish and aquatic life. TDEC crews are on the water overseeing dredging procedures to minimize the impacts to classified uses.

2. **When dredging begins, what will happen to soil and water downstream?**

TDEC has involved many experts to review the dredging plan to make sure downstream impacts will be minimal. The department will continue to oversee dredging from the water to minimize impacts.

3. **How long will Phase I of the dredging last?**

We cannot speculate at this point. It will be dependent on variables such as dredging capacity and hours of operation of the dredges.

4. **How loud is the dredge equipment and how many hours a day will it operate?**
We anticipate dredges to operate 20 hours/day. They will be equipped "hospital controls" on the pumps and exhaust to help deaden the sound as much as possible.

5. **I live 17 miles downstream and we have what appears to be floating ash in our cove. What air and water testing is being done on Watts Bar, in what areas and how often will it be done in the future? If testing is being done, what are the results? How will we be notified of future results?**

   The material that is floating in coves downstream is referred to as "cenospheres." These are silica that has been transformed through the burning process into small spheres, which separate from the ash and are light and highly mobile. Cenospheres do not pose a metals hazard the way the ash can. There is a large contingent of boats and manpower to isolate and remove cenospheres from the reservoir and coves. All sample results are posted on the department's Web site for the public.

6. **How has this situation affected the recreational use of Watts Bar? Will a decision about the safety of the Emory and Clinch Rivers be made prior to boating season?**

   We are aware that many people are concerned about boating, swimming and fishing. People are advised to avoid contact with the ash, which is on the lower Emory River. At this time, recreation on Watts Bar outside the lower Emory River impact zone has not changed from the condition that existed before the ash spill. It is safe to swim, boat and eat most kinds of fish. For details on fish consumption advisories that existed prior to the ash spill, please visit http://www.tn.gov/environment/wpc/publications/advisories.pdf. Monitoring will continue and decisions about appropriate activities will be reassessed using the current sampling data.

7. **Who has the ultimate authority to declare portions of the Emory and Clinch Rivers safe for recreational use?**

   The authority to issue water contact or fish tissue advisories resides within the Department of Environment and Conservation. The agency with authority to place legal restrictions on sport or commercial fishing is the Tennessee Wildlife Resources Agency.

8. **Some people have permits from TVA to water lawns and gardens from the river. Should we stop and if so, for how long?**

   There is no reason to believe residents should discontinue watering in this manner.

9. **What areas of the river, exactly, are affected?**

   The area affected is on the Emory River from its confluence with the Clinch River, travelling upstream on the Emory to River Mile 6.

10. **What is the situation in the Clinch River in regards to the ash release?**

    While some ash has been transported to the Clinch, there have been few water quality standards violations there when compared to the Emory.

Air

1. **Is TDEC monitoring and regulating fugitive dust originating from the rock quarry off Swan Pond Circle Road, as well as the trucks carrying rock from the quarry to the TVA Kingston plant?**

   Yes, the rock quarry is subject to the state air pollution control regulations and permitting requirements. The department has asked all trucks be covered and loads be misted prior to transport to minimize dust.

2. **Can you require 24-hour lighted video surveillance of multiple sites where dust could occur and provide local cable channel access to monitors 24-hours a day/7 days a week to give people real time information on when dust is in the air?**

   The department's Division of Air Pollution Control prefers to rely upon air monitoring data and is working to make that real-time information of current conditions available on EPA's Air Now Web site. We will provide a link to our TVA Kingston Update page as soon as possible in preparation for spring when the warmer weather can contribute to more airborne dust.

3. **What are the results of metals in the air monitoring?**

   Metals analysis includes aluminum, arsenic, barium, beryllium, cadmium, chromium, lead, manganese, mercury, selenium, thallium and vanadium. Lab analysis has detected some metals only at very low levels. The Department of Health indicates these levels do not cause health concerns.

4. **It appears the air monitors are placed upwind of the ash spill (according to the prevailing winds). What is the reason behind this?**

   The monitors are placed downwind of the ash spill. TDEC's Division of Air Pollution Control monitors were sited where it was thought there would be a maximum impact from windborne dust. The thinking is that if the worst-case site was all right, the rest of the area would be okay, too.

   The department is also overseeing the monitors operated by TVA at other locations and in addition, two meteorological towers have been erected to establish local conditions. As the data comes in for evaluation, there may be modifications to the sampling and analysis of air data.

5. **What are the particle sizes for the coal ash?**

   In general, fly ash is typically finer than Portland cement and lime. Fly ash consists of silt-sized particles, which are generally spherical in shape, typically ranging in size between 10 and 100 micron. TDEC-APC is in the process of doing site-specific particle size analysis of the coal ash.

6. **Why has independent air monitoring measured particles below 10 microns and even below 2.5 microns? Will monitoring be adjusted to take outside data into consideration?**

   If independent sampling has measured particles below 10 microns, that data would be consistent with TDEC-APC's PM-10 monitoring. Ambient air monitoring measures all particles in the air regardless of their origin. TDEC-APC has a rich data set of monitoring for PM-2.5 all across the state that confirms the presence of PM 2.5 particles even before the ash spill. This would be consistent with independent monitoring that states PM 2.5 particles are present. From the outset of the ash spill event, TDEC-APC has stated that both air monitoring and dust suppression measures will be continually evaluated during the clean up and modified as necessary.

7. **What types of monitors are being used for air monitoring?**

   Total Suspended Particulate or TSP monitors measure all particle sizes that float in the air. It is also used to collect a high volume sample to better enable laboratories to measure for metals concentrations. PM-10 monitors measure particles 10 microns and smaller in size. There are federal reference method monitors that can also be used for metals and there are continuous monitors called TEOMs (tapered element oscillating microbalance) that can telemeter data real time.

PM 2.5 monitors measure particles 2.5 microns and smaller in size. Like PM-10 monitors, there are federal reference method monitors and there are TEOM monitors.

For a detailed summary of the types of monitors, sampling frequency and locations, please refer to the TDEC-APC March 5, 2009 presentation at slide number 10 for the summary table.

8. **When will PM 2.5 monitors be used?**

   They are being used. Please refer to the table mentioned above.

9. **How will TVA reduce airborne fly ash in the warmer months?**

   TDEC has required TVA to take action to prevent, as much as possible, ash from becoming airborne, particularly as the weather warms and the ash begins to dry. Measures the department is overseeing include straw and seeding the site, applying and encrusting agent to the ash, spraying the ash with water to keep it moist and installing wheel washers for trucks leaving the site. The most promising technique appears to be the application of a substance called Flex-Terra ™. This substance is a cellulosic binder material used in erosion control.

10. **What types of air quality monitors are being used on the trucks? How can air quality be accurately measured when the vehicles are moving – don't the monitors have to be stationary for at least 24 hours?**

    Ambient air monitors are stationary. TVA may be doing some industrial hygiene monitoring for employees driving trucks or operating heavy equipment, but that monitoring is in the domain of TOSHA or its federal equivalent, OSHA.

<u>Land</u>

1. **What measures will be taken to assure safe transport and containment of the recovered ash?**

   The ash being shipped from the site must be transported in accordance with all Department of Transportation rules and regulations. Although the ash will have been processed to remove water, there will still be sufficient moisture content in the processed material to help prevent dust and a specific plan for transport offsite will be required to address dust. All transport vehicles will be required to be tarped and secured prior to leaving the TVA site.

2. **When the final disposal site for the recovered ash is proposed, will it be announced, along with the transport route and mode of transport?**

   Yes, and will be subject to public review and comment.

3. **What risk screening level for arsenic is being used to determine long-term cleanup levels for soil for residential use? EPA uses 0.39 mg/kg. Public communications have stated that the arsenic concentrations are below acceptable risk levels, but most ash samples in and around the community have been higher than 0.39 mg/kg.**

   Soil from affected yards that was tested did not show elevated arsenic levels. The ash itself, did exceed acceptable risk levels and that ash will be removed.

4. **The arsenic level is more than three times EPA's residential standard in some areas. What does this mean and how does it impact residents?**

   It means the ash must be removed from the properties and disposed appropriately.

5. **How and when will ash be removed from people's private properties?**

   TVA has purchased many of the properties that contain ash. The removal of coal ash from yards will be a part of the Corrective Action Plan. Currently, TDEC, EPA and TVA are focusing on the removal of coal ash from Emory the Emory River and other water bodies. Once these actions have begun, TDEC will work with TVA to begin removal of ash from homeowner yards. In the short term, those yards with coal ash have been clearly marked to warn local citizens not to walk over the ash. Further TVA has worked to contour the ash, fertilize and seed the coal ash and received approval to apply a surface coating to prevent the creation of air borne dust from the ash.